

Claims

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A system for transferring a data stream comprising data packets separated by non-packet words from a first clock domain to a second clock domain, the clock domains having similar but not necessarily identical clock frequencies, comprising:

an elasticity buffer;

means for writing the data stream into the elasticity buffer in a cyclic sequence under the control of the clock frequency in the first clock domain,

means for reading the data stream out of the elasticity buffer in a cyclic sequence under the control of the clock frequency in the second domain;

means for monitoring the two sequences to provide an anticipatory signal indicating that the reading sequence approaches proximity to the writing sequence;

means in the first clock domain for inserting a non-packet word into said data stream; and

means in the second clock domain for detecting the existence of the inserted non-packet word and for causing the buffer to advance the reading cycle thereby to discard the said inserted non-packet word.

2. A system according to claim 1 wherein the inserted non-packet word is an idle byte.

3. A system according to claim 1 wherein the elasticity buffer has a maximum of five storage locations.

4. A system according to claim 1 wherein the means for writing and the means for reading include a write pointer and a read pointer respectively.

5. A system according to claim 4 wherein the means for monitoring includes a slip detector responsive to the write and read pointers.

6. A system for transferring a data stream of data packets separated by non-packet words, said system including:

a receiver means

a transmitter means

5 an elasticity buffer for receiving the data stream from the receiver means and for providing said data stream to said transmitter means

means for writing the data stream into the elasticity buffer in a cyclic sequence under the control of a first clock frequency in a first clock domain,

means for reading the data stream out of the elasticity buffer in a cyclic sequence under the control of a second clock frequency in a second clock domain, said second clock frequency being nominally the same as the first clock frequency;

means for monitoring the two sequences to provide an anticipatory signal indicating that the reading sequence approaches proximity to the writing sequence;

means in the first clock domain for inserting a non-packet word into said data stream; and

15 means in the second clock domain for detecting the existence of the inserted non-packet word and for causing the buffer to advance the reading cycle thereby to discard the said inserted non-packet word.

20 7. A system according to claim 6 wherein the transmitter means is a media access control device having a clock signal source at said first frequency and said receiver means is a physical layer device having a clock signal source at said second frequency.

25 8. A system according to claim 6 wherein the elasticity buffer has a maximum of five storage locations.

9. A system according to claim 6 wherein the means for writing and the means for reading include a write pointer and a read pointer respectively.

10. A system according to claim 9 wherein the means for monitoring includes a slip detector responsive to the write and read pointers.

11. A system for transferring a data stream of data packets separated by non-packet words, said system including:

a receiver means

a transmitter means

an elasticity buffer for receiving the data stream from the receiver means and for providing said data stream to said transmitter means

means for writing the data stream into the elasticity buffer in a cyclic sequence under the control of a first clock frequency in a first clock domain,

means for reading the data stream out of the elasticity buffer in a cyclic sequence under the control of a second clock frequency in a second clock domain, said second clock frequency being nominally the same as the first clock frequency;

means for monitoring the two sequences to provide an anticipatory signal indicating that the reading sequence approaches proximity to the writing sequence;

means for monitoring the two sequences to provide an anticipatory signal indicating that the reading sequence approaches proximity to the writing sequence;

means responsive to said anticipatory signal to insert a non-packet word into said data stream in the first clock domain; and

means in the second clock domain for detecting the existence of the inserted non-packet word and for causing the buffer to advance the reading cycle thereby to discard the said inserted non-packet word.

12. A buffer system for transferring a data stream essentially consisting of a succession of data words from a first clock domain to a second clock domain, said system comprising:

an elasticity buffer having a maximum of five storage locations whereby the buffer can store a maximum of five data words;

means for writing the data stream into the elasticity buffer in a cyclic sequence under the control of the clock frequency in the first clock domain,

means for reading the data stream out of the elasticity buffer in a cyclic sequence under the control of the clock frequency in the second domain; and

means for monitoring the two sequences to provide an anticipatory signal indicating that the reading sequence approaches proximity to the writing sequence.

13. A system according to claim 12 wherein each of said storage locations stores one data byte.

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14. A system according to claim 12 wherein the means for writing and the means for reading include a write pointer and a read pointer respectively and the means for monitoring includes a slip detector responsive to the write and read pointers.

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